



# The future for leather

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The Global Leather Coordinating Committee (GLCC) in 2013 sought to identify real and perceived strengths, weaknesses, opportunities and threats of importance to the leather industry.

This paper sets down a mosaic of major issues stemming from these considerations.

### The changing uses for leather

For many centuries, leather was almost exclusively used for footwear, and then later, at the beginning of automotive age almost all cars were fitted with leather seats. Since those times, with the advent of mass production in the automotive sector leather almost disappeared, and the proportion of leather in footwear declined. More recently we have witnessed a growing demand for automotive leather, and in addition to footwear, uses of leather in garments, gloves, furniture and leather goods.

Clearly, the uses of leather have changed and continue to change. In some cases leather has lost its prime position as it could not compete with new materials developed during recent decades. At the same time the use of alternative materials was called for within many areas of use due to the limited availability of leather.

And it is designers who have decided what kind of materials – such as leather - will be used for products. These are creative people, and, apart from leather they have other alternatives available - textiles, plastics, and other natural or synthetic materials.

### The replacement of leather in specific areas

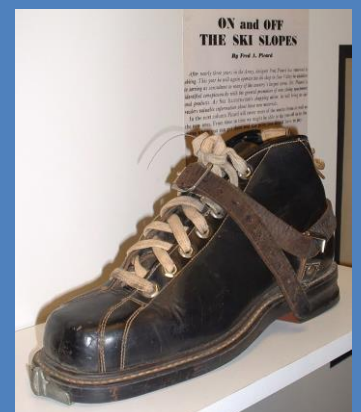
There are many issues to take into account:

One of the main threats for leather are new materials and substitutes with properties or values which are impossible to achieve with leather. A comparison of the requirement and performances of ski boots offers a good example.

In the early 1960's all ski boots were made of leather, but today the proportion of leather ski boots is 0%. This is because there are different requirements depending on both the user (beginner, good skier, top skiers) and kind of use (racing purposes, ski touring, free ride etc.) However, the common requirements for all of these uses is that the ski boots should provide:

**Waterproofness:** If we take into consideration the development of waterproof leathers, even the best can hardly compete with plastic materials.

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- Stability:** There are many different requirements and specific demands, such as a softer or harder skeleton, achieved by the use of various additives or components or layers of appropriate hardness.
- Warmth:** The inner boot has a direct contact with the foot and needs to provide both warm and allow moisture to move through the boot.
- Support:** This important requirement is dependent on the exact foot shape. By using various foams it is possible to hold the foot firmly in the boot without compromising on comfort. In some models there is also a possibility to adjust the inner boot to perfectly fit the foot of a particular user.

This variety of requirements and combination of properties is impossible to achieve with leather, and is the reason why it is no longer used in ski boots! Other examples could include leather protective headwear, such used within contact sports, by pilots, and within the mining industry. It is unimaginable to think that nowadays leather helmets could provide the same or better properties than specialised plastics.

This use of materials where leather was the prime component was not due to any mistake or oversight by leather manufacturers. These replacements were due to chemists and chemical companies and the rapid development of plastic materials that provided better properties in the 20<sup>th</sup> century.

#### COMBINATIONS OF PERFORMANCE AND PRICE

In the 1970's-80's white leather was used almost exclusively for sport shoes. However, with the increase in the production of athletic shoes there was shortage of leather for this growing market. At the same time it became quite difficult to achieve some increasing performance parameters required for sport shoes, and the price comparison *leather vs. synthetics materials* was in favour of synthetic materials. The final result was that shoe companies switched to substitutes - mostly synthetic materials. Now athletic shoes are mostly fully synthetic.

#### OTHER FACTORS

Other issues that must be taken into account when comparing leather and alternative materials include:

- Longevity:** Both leather and textiles should be able to last the whole lifetime of the product, be it an automotive, furniture or other article.
- Comfort:** For specific applications such as comfort, which material is actually more comfortable - especially when air conditioning is not available.
- Recyclability:** At the end of the lifespan of the main product, a textile is easier to recycle than most leathers.
- Publicity:** Advertisements and promotions can be used very effectively to highlight advantages of substitutes for leather.

All of these matters are pertinent to products that are being made with leather at the present time, and may easily be applied to automotive leathers.

## The properties of leather

It is useful to consider three attributes for leather:

### DURABILITY

Durability and strength are considered major leather properties. In this context it is useful to consider requirements found today in footwear, where there are in fact quite different uses for leather and non-leather shoes. For example, sport shoes are mostly non-leather, whereas social and ladies footwear are mostly leather.

In turn, the main requirement here is fashion, where durability can be almost irrelevant. Men's shoes are not subject to rapid fashion changes, but ladies shoes are often discarded before being worn out.

And in addition, while there are no widely known benchmarks or data available with comparisons of leather and non-leather shoes, the key element that generally determines the lifetime potential of shoes is not the leather upper but the sole. This component of the shoe is normally worn out sooner than the upper part - regardless whether it is made from leather or non-leather.

It should also be remembered that a great advantage of non-leather shoes - especially sport shoes - is that it is a well-known that they can be machine washed. Most leather can be hand washed quite readily with gentle wetting agents – and in this event any weakness can be in the methods of construction – but this is not widely appreciated.

### UNIFORMITY

Traditionally, an important advantage of leather was its ability to “breathe”. The parameters for measuring this property are water vapour permeability (WVP), water vapour absorption (WVA) and water vapour coefficient (WVC).

These parameters are not always easy to achieve, and depend on the technology of chemicals and products used and their methods of application. Furthermore, these values also depend on structure of the raw material: this is different from piece to piece as well as from which part of skin/hide is sample taken.

These cross-hide and inter-pack variation applies to other physical properties. It should be appreciated that the properties of various textile materials, both natural and synthetics, are more uniform both across the piece and from batch to batch.

It is unimaginable to think that nowadays leather helmets could provide the same or better properties than specialised plastics.



## SPECIAL APPEAL

Thanks to mass production of synthetic products we have product uniformity and similarity. However, consumers like express their individuality, hence the appeal of natural materials and products. Leather offers appeal in this aspect, as each piece is unique and therefore offers opportunity.

Heavy coated leather is threat to this concept. In particular, automotive manufacture have very strict requirements and the majority of leather required is heavily coated to achieve durability and light-fastness. It is also the case that within multi-fabric constructions - as synthetics cannot match leather in appearance - it is necessary for leather to match the synthetic product. In this situation even for an expert it is difficult to determine if the material used is leather. Sometimes the only proof is that leather is listed in the car specification or invoice.

It is clear that whenever there is a shift from the recognisable leather appearance towards a plastic or synthetic appearance, then the concept of expressing individuality is diminished.

## Major considerations for the future

A number of considerations were taken into account:

### HIDES AS WASTE FROM THE MEAT AND DAIRY INDUSTRIES

- If the approximately 9-10 million tons<sup>1</sup> of raw hides and skins as by-products of the meat industry (generated irrespective of the needs of the leather industry) is not processed into leather and subsequently into consumer goods, then it would remain as organic waste. This would be a significant problem – rotting, odour, volume/mass – to be handled or disposed of somehow. It is even claimed that the carbon footprint of disposal footpath would be greater than processi for the short and long termng into leather.
- In case of serious food shortage in the future, the dilemma *hide for leather vs. hide for food* might tip in favour of the latter. Many of the essential amino acids are absent in collagen, but it is still a protein, although of lower value. It may be that hide utilisation in the future becomes similar to the prevailing use of pig skins.
- A futuristic technical avenue of development is the conversion of collagen emanating from raw hides and skins into a sheet material. In this event the focus would be to retain the advantageous features of leather but as a uniform and predictable material for applications already being served by various types of leather today. This might be viewed as a product with handling advantages of say leather board, but created using intelligent/smart material processing technology. In this situation, the leather products industry will benefit rather than loose, whereas the leather processing industry will change into a higher-tech form of biotechnology.
- In the event where hides/skins were widely converted in other kinds of material - food, cosmetics or other collagen products - jobs in tanning and leather products industry would be lost. Regardless, automotive interiors, furniture, clothing, shoes and accessories will always be required - be it with leather or some substitute. Employment and opportunity would change to other industrial sectors - most likely chemical and the textile industry.

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<sup>1</sup> Wet salted weight

At the same time, the limited availability of hides would offer advantages for specialised leathers in the higher value sectors. There would never be a surplus of these types of leathers, so they would become more valuable. For those willing to provide for these status sectors, there will be opportunity.

#### THE DEVELOPMENT OF ARTIFICIAL COLLAGEN AND NEW MATERIALS

- One situation is dependent upon the success of growing artificial collagen in the sheet form. If this were to eventually succeed, and a natural uniform material with all of the desirable properties were produced, then very specific and improved properties might be developed. This would side-step all of the unwanted components that tanners receive and address as part of raw hides and skins from meat production.
- Another situation to consider is a revolution in technology that uses synthetic inputs to produce a better material in all properties than leather. In this event this product would also compete other synthetic materials, with leather and other natural materials remaining for uses in fashion and luxury goods.

#### THE EFFECTS OF INCREASING DEMAND

- Ever improving living standards - both in industrialised and developing countries – generates wealth and purchasing power. This stimulates demand in fashion, personal preference, prestige and luxury for materials and products made from natural materials and genuine origin, and this includes leather.
- Increasing demand generates higher trade values, which in turn enables better revenues within in the leather value/supply chain. This is instrumental to provide employment and income to all those associated with this industry - manufacture and commerce, management and workforce, equipment and materials suppliers, logistics and general services.
- Globalization is irreversible and stimulated by demand. This creates conditions for different manufacturing bases depending on ever changing social, economic and environmental conditions. Related capacities are subject to (*more-and-more frequent*) relocations that create additional business and employment opportunities, including the leather sector. These opportunities include constructions, equipment, evolving technologies, improved manufacturing efficiencies, education and training, and logistics.

#### THE ROLE OF FASHION AND DESIGNERS

- If it were not for fashion, the property of durability would be of great advantage of leather made items. In reality fashion changes shorten the actual use-span of clothing apparel, including footwear, leather goods and garments. It does not

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seem likely that a rational and environmentally friendly approach will prevail over this short-term consumer culture that results in an excessive production of wastes of all kinds.

Supporters of rapid fashion changes argue that changes in design greatly improves the turnover rates of the industrial and trade sectors concerned. In this case, the key participants within these drives are textiles including leather, apparel including footwear and accessories, and associated sectors. As a corollary, and as many economists believe, these changes are a highly effective accelerator towards higher employment and ultimately overall social and economic growth.

- To date, fashion has stimulated a high consumption of footwear and other leather products. It has been instrumental in improving leather processing technology, manufacturing capacities and productivity, without compromising any essential leather properties such as durability, form stability, comfort and breathability.

However, designers drives change that can readily shift the way that products and materials are used and perceived. The force of marketing is also very powerful, and both advertisements and promotions can be used very effectively to highlight advantages of substitutes.

The threat is that in the future the consumer vision of leather might change so that it is not necessarily associated with luxury. Designers and marketing have a crucial role in the long term success of the leather industry.

#### RECYCLEABILITY AND DISPOSAL

- For all practical purposes synthetic materials are not biodegradable. The ultimate disposal of footwear and garment made of synthetic materials may pose a bigger problem than disposal of leather products. However, increasing legislative pressure for *recycling* of synthetic materials (already present in EU) may diminish this advantage especially in given the fact that leather is not easily recycleable.

#### MALPRACTICE, FALSE CLAIMS AND AGENDAS

- Very aggressive campaigns based on false claims and agendas and disregard for science are damaging to the leather industry. Compounded with excessive legislation and the exaggeration of risks associated with presence of Substances of Very High Concern (SVHC) may in the long-run seriously undermine the future of the leather sector.
- The majority of leather processing industry is responsible and complies with social and environmental requirements. However, there are still some producers that disregard their social and environmental obligations. These people do serious damage to the credibility of the industry: they propeturate an image of a dirty, exploitive and irresponsible industry, and provide fuel to support distorted beliefs, opinions and agendas.

#### Conclusions arising from the study

- It is important to recognise that leather substitutes can offer completely consistent surface appearance and advantages in cut-component yields. It is also important to understand that some substitute materials perform better than leather in one or selected properties. In addition, that developments in materials science will produce ever improving products.



However, leather offers the qualities that are recognised in prestige goods – fashion statements, value and individuality. It is understood as a natural product, and in the same stable as wool, cotton and silk in the textile industry, wood in housing and furniture, and other unique and desired materials. Substitute materials might offer advanced properties in selected areas, but in total the combination of properties and scope of leather in prestige products is very significant.

Taking this into account, it is important that leather should not compete with synthetic/plastic materials. This places a demand on innovation and development, especially in areas of appearance and performance: it needs to be recognised that it is a natural product, but it should look like leather.

- It is most important to understand and appreciate the value of designers as they significantly influence fashion and product demand. It is also important to recognise that designers do not want to be restricted to synthetic materials, or heavily coated leathers of limited scope. Leather can always offer designers - and in turn consumers - an attractive and flexible alternative to mass production and materials.
- The renewability factor of leather is a key strength as it is fully based on an unavoidable and troublesome by-product that is continuously generated from another industry.
- However, these positive attributes are counterbalanced by significant weakness. These are due to a lack of understanding by general population/consumers about leather and the leather industry. In this respect there are two threats:

i] Confusion stemming from commodity-type leathers in comparison with synthetic/artificial replacement materials. Good communication and promotion concerning the naturalness, individuality and beauty aspects of true leather are absent. There is a need to promote the material that we produce, and this is seen as a major opportunity.

ii] The effects of false-claims and agendas. Damage is systematically taking place. It is important to emphasise the sustainability and responsibilities – social and environmental - of leather production to both our customers and consumers



The limited availability of hides would offer advantages for specialised leathers in the higher value sectors. There would never be a surplus of these types of leathers, so they would become more valuable. For those willing to provide for these status sectors, there will be opportunity.

